

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 26

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte GEN ICHIMURA and MASAYOSHI NOGUCHI

Appeal No. 1999-1935
Application No. 08/754,270

HEARD: April 24, 2001

Before THOMAS, KRASS and BLANKENSHIP, Administrative Patent Judges.

KRASS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 1-10, all of the claims pending in the application.¹

The invention is directed to a method of and apparatus for muting a digital signal wherein a switch selectively switches between a digitized signal and a pre-set muting

¹While the examiner's statement of rejection in the answer includes claims 1-11, claim 11 has been canceled (amendment of Sept. 28, 1998).

pattern signal and a finite impulse response filter converts the output of the switch into an analog signal. Spectrum characteristics of the pre-set muting pattern signal are selected to coincide with a plurality of stop-band frequencies of the filter and to include stop-band frequencies below a cut-off frequency of $\frac{1}{2}$ Fs of the filter.

Representative independent claim 5 is reproduced as follows:

5. A digital signal muting method for muting a digital signal digitized with at least one bit using a muting command at a time of transmission of said digital signal, comprising:

selecting a pre-set muting signal generated in response to said muting command so that a spectrum distribution of said pre-set muting signal coincides with a plurality of stop-band frequencies of a finite impulse response filter configured for converting said digital signal into an analog signal and to include stop-band frequencies below a cut-off frequency of $\frac{1}{2}$ Fs of said finite impulse response filter, and

wherein said pre-set muting pattern signal is 96 HEX.

The examiner relies on the following references:

Ahamed	4,142,066	Feb. 27, 1979
Miyakoshi et al. (Miyakoshi)	4,812,815	Mar. 14, 1989
Nishio et al. (Nishio)	5,574,453	Nov. 12, 1996

In addition, the examiner relies on the preamble of the original claims, since amended, as admitted prior art [APA].

Claims 1-10 stand rejected under 35 U.S.C. § 103. As evidence of obviousness, the examiner offers two, alternative, combinations of prior art, the first being Nishio in view of Miyakoshi and Ahamed, the second being APA in view of Nishio and Ahamed.

Reference is made to the brief and answer for the respective positions of appellants and the examiner.

OPINION

With regard to the first rejection, the examiner cites Nishio as disclosing a signal processed by sigma delta modulation wherein Figure 10 shows a switch for selecting between an idling signal and the sigma delta modulated signal and coupling one of the signals to an output terminal. The examiner notes column 10, lines 31-41, of the reference for the teaching of using, as the idling signal, a signal of a period of one half of the sampling frequency f_s of the sigma delta modulation, resulting in a signal spectrum formed of only a component of $\frac{1}{2}$ of the sampling frequency f_s , making it possible to suppress noise.

The examiner recognizes that Nishio lacks a teaching of the claimed finite impulse response filter but contends that filtering of a DAC output is “fundamental to the circuit and actual non-existence of such a low pass filter would be outside the norm” [answer-page 4].

The examiner cites Miyakoshi for its disclosure of a delta-sigma modulator in Figure 15 and an idle signal generator with a selection made between them responsive to a muting signal, citing column 7, lines 55-61 for the suggestion that the muting signal may be any frequency as long as the pulse signal has a 50% duty cycle, thus limiting suitable idling signals.

Finally, the examiner relies on Ahamed, column 3, lines 15-25, for the teaching of silence sequences that generate components at the harmonic frequencies as one “would expect” [brief-page 3].

Appellants’ response is that Nishio has no filter in the output signal corresponding to the analog FIR filter 5 of the instant application and that Ahamed relates to a noise suppression circuit for a delta modulation speech encoding system with no filter in the encoded signal output line.

Moreover, appellants point out, in the instant claimed invention, the frequency characteristics of the muting pattern signal are specifically chosen so that the spectrum characteristics of the muting pattern signal coincide with a plurality of stop-band frequencies of the finite impulse response filter which exist below the cut-off frequency of the low-pass filter. The position of appellants is that, clearly, neither Nishio nor

Miyakoshi is concerned with specific spectrum characteristics. As to Ahamed, appellants contend that this reference does not even relate to a sigma-delta modulation or a “one-bit encoding system” [brief-page 7]. Appellants also contend that Ahamed originated at a time prior to the development of one bit encoding systems.

Therefore, conclude appellants, the skilled artisan would not have been led to modify the muting signal in Miyakoshi to provide spectrum characteristics that would correspond to the stop-band frequencies of the low-pass filter of Miyakoshi based on the “rather obscure description of the silence sequence in Ahamed at column 3, lines 6 through 25” [brief-page 8].

While we might agree with the examiner that it would have been obvious to put a filter at the output terminal of Nishio, we agree with appellants that there would appear to be no reason for the skilled artisan to have made the other modifications proposed by the examiner. In accordance with the language of the claims, the finite impulse response (FIR) filter means is chosen first and then the muting pattern signal is selected such that its spectrum characteristics coincide with a plurality of stop-band frequencies of the FIR filter and to include stop-band frequencies below a cut-off frequency of $\frac{1}{2} F_s$ of the FIR filter means. The examiner has made no showing that

any of the applied references or combination thereof suggests the selection of spectrum characteristics of a pre-set muting pattern signal in such a manner. Notwithstanding the teaching of selecting certain harmonic frequencies in the speech encoding system of Ahamed, the examiner has made no convincing showing as to why or how the skilled artisan would have extended such a teaching to modify a FIR filter means placed at the output terminal of Nishio in such a manner as to provide a pre-set muting pattern signal such that its spectrum characteristics coincide with a plurality of stop-band frequencies of the FIR filter means and as to include stop-band frequencies below a cut-off frequency of $\frac{1}{2} F_s$ of the FIR filter means.

Accordingly, we will not sustain the rejection of claims 1-10 under 35 U.S.C.

§ 103 over the combination of Nishio, Miyakoshi and Ahamed.

With regard to the rejection under 35 U.S.C. § 103 based on APA, Nishio and Ahamed, we also will not sustain this rejection for reasons similar to those explained supra. That is, none of the applied references suggests the claimed limitation directed to selecting the spectrum characteristics of the pre-set muting pattern to coincide with the plurality of stop-band frequencies of the FIR filter means.

While appellants and the examiner argue about what is admitted by use of Jepson-form claims originally filed, this is not relevant to our decision. While the

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preamble of a Jepson-form claim will normally be implied to be directed to prior art subject matter, unless rebutted by an applicant, which appellants have not done in the instant case, the distinguishing limitations of the instant claims are not part of the original claim preambles. Our decision is based on the lack of suggestion by the applied references of the claimed spectrum characteristics of the pre-set muting pattern coinciding with the plurality of stop-band frequencies of the FIR filter means.

The examiner's decision is reversed.

REVERSED

JAMES D. THOMAS)	
Administrative Patent Judge)	
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)	
)	BOARD OF PATENT
ERROL A. KRASS)	APPEALS AND
Administrative Patent Judge)	INTERFERENCES
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HOWARD B. BLANKENSHIP)	
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